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Research Article

PHARMACOGNOSTICAL STUDY OF *DAMANAK - ARTEMISIA NILAGIRICA* (C.B CLARKE) PAMP.)

Akash P. Chavan[1]*, Vivek M. Chaudhari[2]

*[1]Assistant Professor, [2]Associate Professor, Dept. of Dravyaguna, Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Pune, Maharashtra, India.

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ABSTRACT

Damanak- Artemisia nilagirica is a tall, aromatic, pubescent or villous shrub-like herb found throughout India's hilly regions. The plant has been mentioned in various *Nighantu* about its use as *Hrudya, Vrushya, Grahani, Visha, Kustha, Kleda, Kandu* and in *Tridosha* (disease of all the three *Doshas*). There are many ethnobotanical uses which indicates this herb should be studied more extensively to confirm these results and reveal other potential therapeutic effects. *Davana* oil has a deep, mellow, persistent rich fruity odour. Oil of *Davana* is used in expensive perfume compositions. It is understood that the oil is also being used for flavouring cakes and pastries. This also marks the use of *Damanak* as commercial plant. The present article intends to study the plant for its pharmacognosy and to know its therapeutic uses mentioned in various *Nighantu.*

INTRODUCTION

Damanak (Artemisia *nilagirica* (C.B CLARKE) Pamp.) is well known plant in the Nighantus. The plant has not been mentioned in Bruhat-trayee. *Damanak* commonly known as Indian wormwood. Leaves, flowering tops and whole part of the plant is used. Leaves and flowering tops are bitter, astringent, acrid, thermogenic, aromatic, anodyne, anti-inflammatory, depurative, diuretic, emmenagogue, aphrodisiac, appetizer, digestive, stomachic, anthelmintic, febrifuge, deobstruent, alexeteric and haematinic. They are useful in vitiated conditions of *Vata* and *Kapha*, cough, asthma, bronchitis, cephalalgia, nervous and spasmodic affections, inflammations, leprosy, skin diseases, pruritus, strangury, amenorrhoea, dysmenorrhoea, anorexia, dyspepsia, flatulence, colic, intestinal worms, fever, hysteria, measles and anaemia.[1]

MATERIALS AND METHODS

Literary research was done by referring Ayurvedic classics, various journals and internet sources.

RESULTS AND DISCUSSION

1. Vedic period

Damanak is not found in Vedic literature.

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2. *Samhita* Period

Damanak was not found in *Bruhat-trayee.*

Nighantu Period

From 10th century onwards, *Nighantu* were written. The drug *Damanak* is extensively described along with its synonyms, properties and uses in various *Nighantus* under specific *Vargas*. The indication of *Damanak* in *Vikaras* (diseases) affecting the skin, diseases of *Rakta,* excess secretions, itching and disease of all the three *Dosas* is specifically mentioned in Bhavprakash Nighantu. *Bhavprakash Nighantu, Kaiyadev Nighantu, Raj Nighantu, Dhanwantari Nighantu* all have described *Damanak.*

- Drug: *Damanak, Damanah* [2]
- Botanical Name: Artemisia *nilagirica* (C.B CLARKE) Pamp.
- Family: Asteraceae (Compositae)
- Scientific Classification of *Damanak*
- Kingdom: Plantae
- Genus: Artemisia
- Order: Asterales
- Phylum: Tracheophyta
- Class: Magnoliopsida

Synonyms of *Damanak* [3]

Sanskrit: *Damana, Gandhotkata, Muniputra, Bramhajata, Pundarika, Tapodhan, Tapasvi.*

Marathi: *Davana*

Hindi: *Nagdona*
English: Indian wormwood, Fleabane
Tamil: *Makkipu*
Malayalam: *Makkipuvu, Masipatri*
Kanada: *Urigattige, Urruvalu*

Table 1: Synonyms of *Damanak (Artemisia nilagirica)* [4]

1.	दमन- *Damana*	Over powering, self-controlled.
2.	गन्धोत्कट- *Gandhotkata*	*Artemisia abrotanum*
3.	मुनिपुत्र- *Muniputra*	Muni's son, one who is sage, ascetic.
4.	ब्रम्हजटा- *Bramhajata*	Brahmanical caste or race, belonging to it.
5.	पुण्डरीक- *Pundarika*	A lotus flower, expressive of beauty
6.	तपोधन- *Tapodhan*	A great ascetic
7.	तपस्वी- *Tapasvi*	One who rich in religious austerity. Great ascetic.

Table 2: Properties of *Damanak (Artemisia nilagirica)* [5]

S.No	Property	*Damanak (Artemisia nilagirica)*	Bhavprakash Nighantu	Kaiyadev Nighantu	Raj Nighantu	Dhanwantari Nighantu
1	*Rasa*	*Kashay, Tikta*	✓✓	✓✓	✓✓	✓×
2	*Guna*	*Laghu, Ruksha*	✓✓	✓	✓✓	✓✓
3	*Veerya*	*Ushna*	✓	✓	×	×
4	*Vipaka*	*Katu*	✓	✓	✓	_
5	*Doshakarma*	*Tridosha shamak*	✓	✓	✓	✓
6.	*Karma*	*Hrudya*	✓	✓	×	✓
		Vrushya	✓	✓	×	×
		Grahani	✓	×	×	×
		Vishaghna	✓	✓	×	✓
		Raktaj vikar	✓	✓	×	×
		Kushta	✓	✓	✓	✓
		Kleda	✓	✓	×	×
		Kandu	✓	✓	×	✓
		Visphota	✓	×	×	×

Table 3: Classification of *Damanak* in *Nighantu* according to *Varga*

S.no	*Nighantu*	*Varga*
1.	*Bhavprakash Nighantu*	*Pushpa Varga*
2.	*Kaiyadev Nighantu*	*Aushadhi varga*
3.	*Raj Nighantu*	*Karveeradi varga*
4.	*Dhanvantari Nighantu*	*Chanadanadi varga*
5.	*Shodhal Nighantu*	*Chanadanadi varga*

Description of *Damanak* in various *Nighantus*

1) According to *Bhavprakash Nighantu*[6]

उक्तो दमनको दान्तो मुनिपुत्रस्तपोधनः।
गन्धोत्कटो ब्रम्हाजटो विनीतः कलपत्रकः॥ भा.प्र
दमनस्तुवरस्तिक्तो हृद्यो वृष्यः सुगन्धिकः
ग्रहणीविषकुष्ठास्रक्लेदकण्डुत्रिदोषजित्॥ भा.प्र

The synonyms of *Davana* are *Damanaka, Danto, Muniputra, Tapodhana, Gandhotkata, Bramhajata, Vinita* and *Kalapatraka. Damanaka* is astringent and bitter in taste, cordial, aphrodisiac, fragrant diminishes the effects of poison and cures skin diseases, diseases of *Rakta,* excess secretions, itching and disease of all the three *Dosas*.

2) According to *Kaiyadev Nighantu*[7]

ऋषिपुत्रो ब्रह्मजटी दमो गंधोत्कटो मुनिः
पाण्डुरानो दमनको विनीतः कुलपुत्रकः ।। १५६६।।
पुंडरीको मुनिसुतो दान्तः साधुम्तपोधनः
दमनस्तुवर स्तिको हृद्या वृष्यस्त्रिदोषनुत् ॥ १५७० ।।
निहन्ति कफजां कण्डं कुष्ठक्लेदविषग्रहान् ।। कै.नि

Rushiputra, Brahmajati, Dama, Gandotkata, Muni, Panduraag, Vinit, Kulaputra, Pundarik, Munisuta, Danta, Sadhu and *Tapodhan* are the *Parayayi's* of *Damanak. Damanaka* is astringent and bitter in taste, cordial, aphrodisiac, *Tridosha, Kaphaj Kushta,* and diminishes the effects of poison.

3) According to *Dhanvantari Nighantu*[8]

दमन: पाण्डुरागो स्यात् दान्त: गन्धोत्कटो मुनि:।
पुण्डरीको ब्रम्हजटस्तपस्वी ऋषिपुत्रक:॥ ६३
दमन:स्याद्रसे तिक्तो विषघ्नो भुतदोषनुत्।
त्रिदोषशमनो हृद्याः कण्डुकुष्ठपह: स्मृत:॥ ध.नि ६४

Panduraag, Danta, Gandotkata, Pundarika, Bramhajata, Tapasvi, Rushiputrak are the *Paryayi* names of *Damanak. Damanak* is bitter in taste and it is useful in poisons, worm infections, balances the *Tridoshas* and also useful in cardiac and skin diseases.

4) According to *Raj Nighantu*[9]

दमनः शीतलस्तिक्तः कषायकटुकश्च कुष्ठदोषहरः|
द्वन्द्वत्रिदोषशमनो विषविस्फोटविकारहरणः स्यात् ॥ (रा.नि.)

Damanak is bitter and astringent in taste. Useful in *Tri* and *Dvi doshaj* diseases and also in skin diseases.

5) According to *Sanikrnavarga*[10]

ऋषिक्षमः सत्यपरः साधकः साधुगन्धिकः |
साधुर्मुनिर्दमनको दमनः कथ्यते बुधैः ||१०४७|| अ.म सङ्किर्णवर्ग

Damanak has been given names such as *Rushiksham, Satyapar, Sadhaka, Sadhu, Sughandita, Muni.*

6) *According to Nighantushesh*[11]

दमने स्याद् ब्रह्मजटा मुनिर्दान्तर्षिपुत्रकौ ||२५१||
गन्धोत्कटः पुण्डरीकः पाण्डुराङ्गस्तपस्व्यपि |२५२| निघन्टु शेष/ गुल्मकाण्ड

According to *Nighantushesh Damanak* has synonyms such as *Bramhajata, Muni, Danta, Rushiputra, Gandhotkata, Pundarika, Panduraag.*

7) According to *Abhidhana manjiri*[12]

ऋषिर्दमनकः दान्तविनीतः पाण्डुरोगकः ||६१||
अभि.र.मा.तिक्तस्कन्ध/69

The synonyms mentioned are *Rushi, Danta, Vinit, Pandurogak.*

8) According to *Shodhal Nighantu*[13]

तगरं सर्वकार्येषु कथितं कुष्ठवत् गुणैः |
दमनः कफपित्तास्रहृत्सुगन्धिरसायनः ||३५१|| सो.नि.गुण 3/351

Damanak works on *Kapha, Pitta, Rakta* which known to be *Sughandhi* and *Rasayan.*

Botanical description of the *Damanak*[14]

A tall, aromatic, pubescent or villous shrub-like herb found throughout India's hilly regions, rising to 3,600m in the western Himalayas and 1.500-2.400m in Sikkim and Khasi hills. It's also found in Mount Abu in Rajasthan, the Western Ghats, and from Konkan southwards to Kerala. Large ovale lobed leaves. Flower heads are small ovoid or globose in panicled racemes and are laciniate or 1-2 pinnatipartite.

Phytochemistry[15]

Twenty one irregular monoterpenes (non-head-to-tail isoprenoid skeleton) containing either artemisyl or santolinyl skeleton isolated from essential oil and identified; eight new compounds characterised as 5,6-epoxy-3,3,6-trimethyl-1-hepten-4-one (1), 3-methyl-1-(1,1 dimethyl-2-propenyl)-2-butenyl propionate (II), (2E)2,5-dimethyl-4-vinyl-2,5-hexadienyl propionate (III), (2Z)2,5-dimethyl-4-vinyl-2,5-hexadienyl acetate (IV), 5-methyl-2 methylidene-3-vinyl-4-hexenyl acetate (V), 1,1,4-trimethyl-2- vinyl-3-pentenyl acetate (VI), 1,1,4-trimethyl-3-oxo-2-vinyl-4-pentenyl acetate (VII) and two diastereoisomers of 3-hydoxy 1,1,4-trimethyl-2-vinyl-4-pentenyl acetate (VIII).

Cultivation of *Davana*[16]

Davana is known by the same name in Kannada, Tamil and Marathi languages, is a traditional herb in South India, prized for its fruity fragrance. It forms an important component in garlands and bouquets, where sprigs of *Davana* lend an element of freshness and a rich sumptuousness of odour. The essential oil of *Davana* has not attained wide popularity particularly in India, since it is hardly known to the perfumer and the flavourist. Perhaps, the high price of the oil has also hindered its popularity. The oil is a brown viscous liquid with deep mellow, persistent rich fruity odour USA. Japan and European countries are showing increasing interest for the oil and it is understood that it is being used for flavoring

of cakes, pasuries, tobacco and beverages. It is also used in fine perfumes.

Soil and Climate

Davana is mostly cultivated in the red soil regions in South India. It comes up very well in rich loamy soils. Season is not an important criterion when *Davana* is grown for use in garlands and bouquets. In this case the crop is pulled out when it is about two months old. On the other hand. Season is very important when the crop is grown for production of oil. In the latter case the crop is allowed to grow until it flowers, which takes about 4 months from sowing. It is grown as a short-term crop from November to February/March and as a ratoon crop extending upto April/May. A few light showers in the season, bright sunshine, a crisp winter with no frost and heavy morning dew, all contribute to a good crop. The crop does not withstand heavy rains. Particularly, when the crop is blooming and is getting ready for harvest, cloudy weather or rain could substantially affect the oil yield.

Nursery

Davana is propagated by seeds. The seeds are tiny and one gram contains about 6,000 seeds. For sowing, the seeds from the previous season crop should preferably be used since poor viability is reported in the older seeds. Nursery-beds, two meter long and one meter wide, are prepared after thoroughly working up the soil. Well-decomposed farmyard manure at the rate of 10kg per bed is applied and mixed well into the soil. 1.5kg of seeds are sown in a nursery area of 500sqm, which gives enough seedlings for transplanting of one hectare. This seed-rate is sufficiently in excess, to allow the probable field losses due to poor germination, damping-off of the seedlings, ant-menace, etc., and also for the selection of healthy seedlings at the time of transplanting. The seeds are mixed with about 10kg of sand and broadcast (in first week of November) in the nursery beds, so that approximately three grams of the seed fall over an area of 1sqm. A thin layer of sand is spread uniformly over the seeds and the beds are hand-watered twice a day, if necessary, until the seeds germinate and establish well. Seeds sprout in about 3-4 days from sowing. After another 3-4 days, hand-watering can be discontinued and the plots irrigated every day. It is also in practice to tie the seed-sand mixture in a cloth bag, after appropriately moistening it and keeping it for about 48 hours. During this period, the seeds germinate and are then sown into the nursery-beds. This is believed to discourage the ants from carrying away the seeds. The ant-menace can, however, be prevented in direct sowing in the nursery by mixing about 10kg of 5 per cent BHC per hectare into the soil, about 10 days prior to sowing and irrigating the beds. The seedlings may be given a light foliar spray (0.1-0.3%) of urea at weekly intervals from third week of sowing. Concentration of the spray solution should be low initially and may be increased with age. Each spray requires about 10 to 30gm of urea per bed.

Transplanting, Irrigation and Weeding

The seedlings reach transplanting stage about 5 weeks after sowing. They should then be about 10-12 cm tall. In the meanwhile, the field is laid into beds of convenient size, depending upon the local conditions. The beds are irrigated a day prior to transplanting. The seedlings withstand transplanting very well. Transplanting is done at a spacing of 15cm between rows and 7.5cm between plants. The seedlings are hand-watered immediately after the transplanting. Subsequently, the beds are irrigated every day for the first ten days, and thereafter once in two days. Irrigation on alternate days should be given to the ratoon crop also. The crop requires two weeding, one for the main crop and the other for the ratoon crop.

Manures and Fertilizers

Prior to transplanting of the seedlings, 6 tonnes of farm yard manure, and 250kg of superphosphate and 65kg of muriate of potash per hectare are incorporated into the soil. Nitrogen is given in three equal splits, the first dose 10 days after transplanting and the subsequent doses being at 15 days intervals. In total, 350kg per hectare of urea is applied to the main crop. For the ratoon crop. 175kg of urea per hectare is applied in two equal splits. The first application is made soon after the harvest of the main crop and the second application is made one month after the first application.

Harvesting

The plants grow fast after transplanting and the first flower buds appear by the end of January. For obtaining good yield and quality of oil, the crop should be harvested when a large number of flower buds are open. This stage is normally reached by the end of February or first week of March harvesting is done with a sharp sickle at a height of about 10cm from the ground. Fresh sprouts appear again and give one more crop after about two months.

Pests and Diseases

There appears to be no report of damage caused by insects or pests on the crop except that the ants carry away the seeds when they are sown. The crop, in the nursery, is often subject to damping-off at the tender seedling stage caused by Rhizoctonia species. This is more common during cloudy weather and after rains. This is easily overcome by adjusting the sowing time, so that bright weather prevails during the first few days of the early seedling stage.

Distillation

Davana herbage is dried in shade for 2-3 days and then steam-distilled for obtaining the oil. The distillation equipment consists of a boiler, distillation stills, condensers and receivers. Distillation still made up of mild steel. It has perforated metal sheet at the bottom to support the herbage which is loaded into the still for distillation. Loading and unloading can be mechanized with the help of an overhead chain-pulley block. The lid of the still can be swung aside during loading and unloading. It is important that the herbage should be evenly packed inside the still; otherwise steam channels may form during the distillation and result in poor yields. The condenser, which cools the hot vapors received from the still, consists of many tubes made up of copper stainless steel and mounted inside a jacket. The condensers provided with inlet and outlet for the circulation of cooling water. The hot vapors consisting of steam and essential o vapors are cooled in the condenser tubes and the condensate flows out into the receiver. The oil, being lighter than water and insoluble. Floats on the top in the receiver and only the water gets drained out. The oil can be drawn off separately at the end of the distillation. The receiver is fabricated out of stainless steel and consists preferably of two compartments, so that if any oil escapes from the first compartment. It can be retained in the adjoining compartment. Distillation is carried out preferably at atmospheric pressure as this will prevent any sort of burnt odour in the oil. Usually about six to eight hours are required for completing one distillation. The oil should be free from sediments, suspended matter and moisture before storing. It is stored in aluminum container. The containers should be filled to the brim to exclude all air to prevent deterioration during storage.

Oil Content and Yield

Total yield of fresh herbage from the main crop and the ratoon crop is about 12 tonnes per hectare, which on shade drying and distillation yields about 7.5kg of *Davana* oil. Appropriate maturity of the crop and proper shade drying of the herbage are important factors affecting the quality and yield of the oil. In large scale distillation. an average yield of 0.2 per cent from a material dried for about 2 days may be considered satisfactory. Oil content in *Davana* is maximum in the flower-head and is much less in the leaf and stem. The following percentage yields have been obtained in the laboratory distillations:

Table 4: Percentage yield of oil (v/w) in *Davana*

(Dried For 2 days)	Air-dry base	Oven-Dry base
Whole plant	0.38	1.06
Flower head	0.55	1.38
Leaves	0.17	0.30
Stems	0.10	0.30

At the time of harvesting, flower heads contribute nearly 45 percent of the total weight of the plant material, while it is only about 30 per cent in the case of the ratoon crop.

Chemical Constituents and Uses

Davanone, a sesquiterpene ketone, is the main component of the oil of *Davana*. Linalool, dehydro-a-linalool, terpinen-4-ol. nordavanone (C,-terpenoid) and davanafu rans have been isolated in a fraction of *Davana* oil. These com pounds are reported to contribute for the characteristic odour of *Davana* oil. *Davana* oil has a deep, mellow, persistent rich fruity odour. Freshly distilled oil has sharp and herbal top notes. This disappears on keeping, leaving a mellow and pleasant note. Oil of *Davana* is used in expensive perfume compositions. It is understood that the oil is also being used for flavouring cakes, pastries, tobacco and some of the costly beverages.

Organoleptic study

Organoleptic study was performed with the whole plant and with the powder.

Damanak was tested for *Shabda* (sound), *Sparsha* (touch), *Roopa* (color, size and shape), *Rasa* (taste), and *Gandha* (odour).

Table 5: Organoleptic study

Parikshan	**Observation**
Shabda	Fractured sound
Sparsha	Rough
Roopa	Pale yellow
Rasa	*Kashaya, Tikta*
Gandha	*Karpuragandha*

Fig. 1: Fresh plant: *Damanak* (*Artemisia nilagirica*)

Fig. 2: Dry Plant: *Damanak* (*Artemisia nilagirica*)

Organoleptic characters

Plant sample has following characteristics:

a. **Texture and Surface**- Rough, compact tufts on the plant.
b. **Colour**- Pale yellow to buff colour stem, leaves green adaxially, with silvery white colour on abaxial surface, gradually turns yellowish to brown once dried.
c. **Odour**- Pungent camphorous.
d. **Taste**- Leaves are blooming tops are bitter, astringent and aromatic.

Macroscopic Characters[17]

Shrub, 1-3m tall, aromatic, perennial, fruticose; stems paniculately branched, incanus, pubescent or tomentose. Leaves simple alternate, upper ones sometimes sessile; lamina ca. 1.5-8 x 1-4cm, ovate, lacerated or pinnatifid, lobes acute, mucronate, pubescent above, white felted below. Capitulum solitary or fascicled in paniculate racemes, globose, ca. 0.2-0.4cm in diam., yellowish white; involucral bracts 2-3-seriate, oblong-ovate, margins scarious. Achenes minute, oblong-elipsoid, blackish; pappus absent.

Microscopy

Transverse section of Midrib and leaf

A transverse section of the leaf shows a dorsiventral structure with one row of palisade under the upper epidermis, interrupted by collenchymatous cells in the midrib region.

The midrib is more prominent on the lower surface and shows parenchymatous cortex. Each vascular bundle shows a pericycle formed of an upper and lower area of collenchymas; endodermis is well differentiated surrounding the vascular bundles.

A number of schizogenous glands are present in the cortex.

Stomata: They are oval anisocytic or anomocytic type, present on both surfaces of the leaf and being numerous on the lower of the lamina and occasionally present in the neural surfaces.

Glandular & non-glandular trichomes: Upper and lower epidermises bear numerous non-glandular and few glandular trichomes.

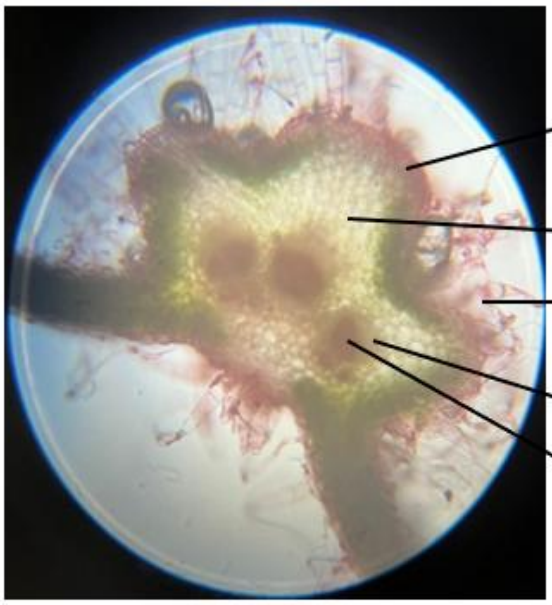

Fig.3 T.S of Midrib

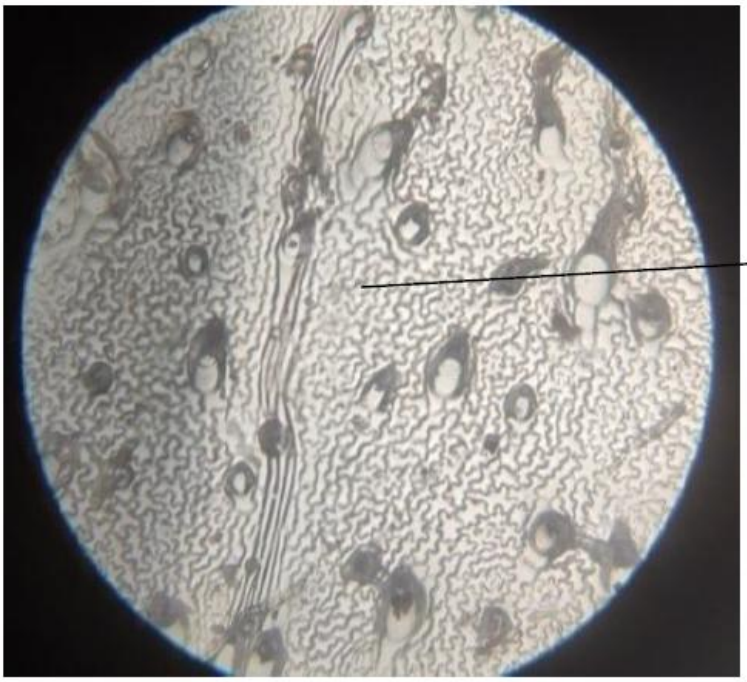

Fig.4 Stomata

Transverse section of Stem

A transverse section of the stem is circular in outline and consists of an outer cork followed by phellogen and narrow phelloderm. The endodermis is well differentiated. It followed by pericycle which represented by a discontinuous ring of lignified fibers separated by parenchyma. The vascular tissue consists of a ring of 12 -14 collateral vascular bundles radially arranged around wide parenchymatous pith in the center.

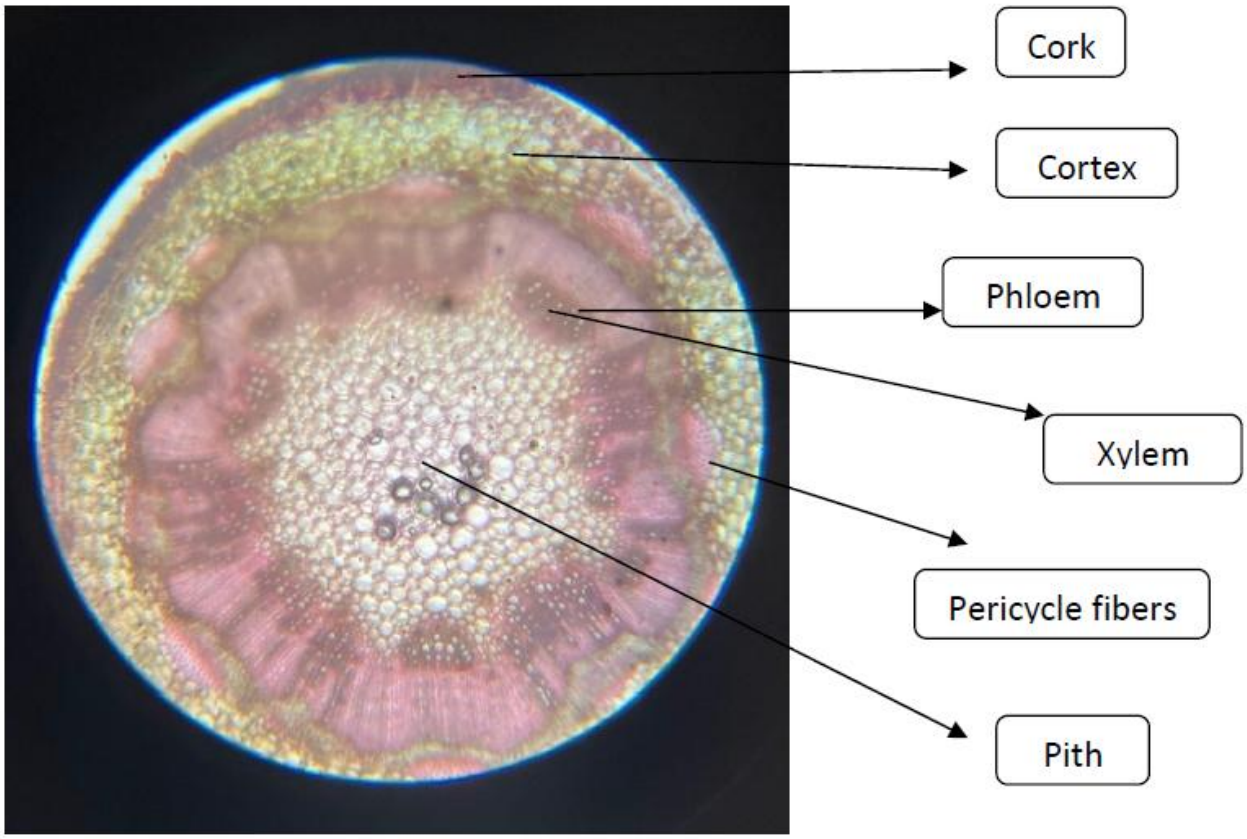

Fig.5 T.S of Stem

Transverse section of Root

Transverse section of the root appears circular in outline. It shows an outer cork surrounding a narrow parenchymatous cortex lined internally with well differentiated endodermis. The pericycle is collenchymatous with isolated groups of sclereid surrounding a wide cylinder of vascular tissue with tetrarch. Primary xylem in the center. Phelloderm, the pericycle shows groups of lignified fibers. The cambium is well differentiated. The medullary rays are distinguished.

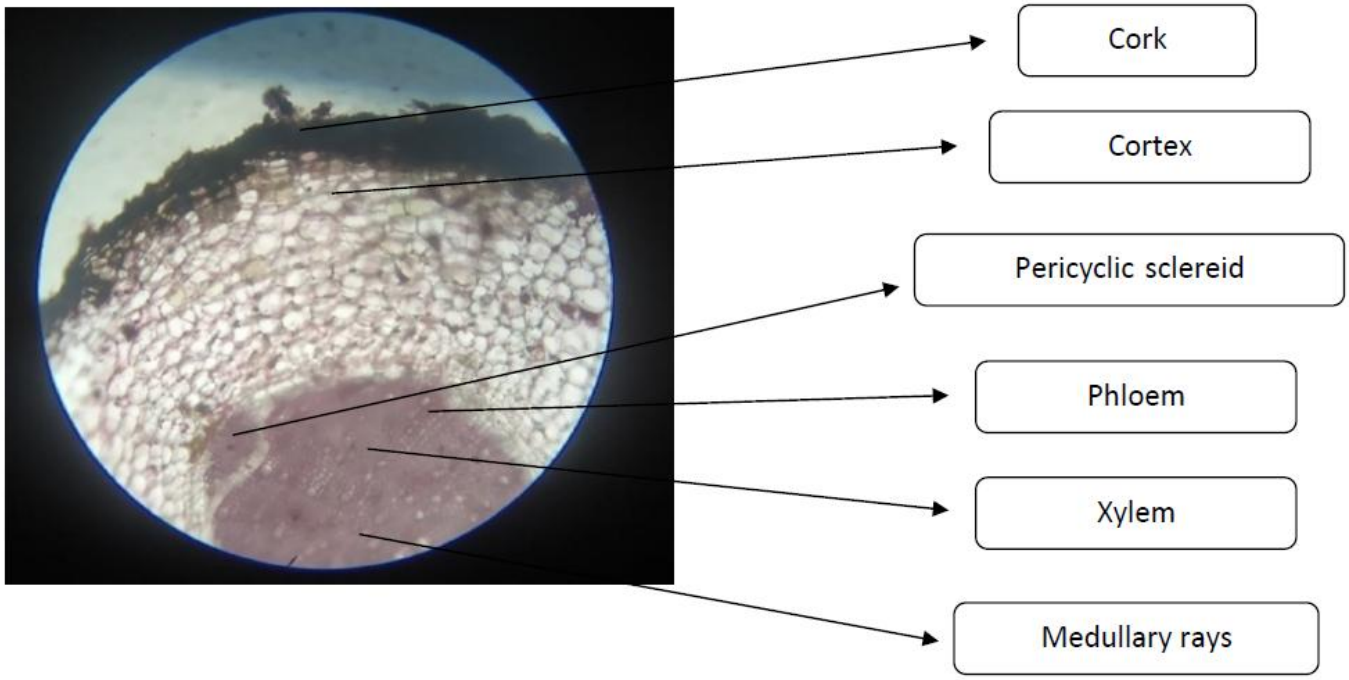

Fig.6 T.S of Root

Powder Microscopy

The powder of the plant is greenish yellow in colour. Slightly bitter in taste.
Rectangular cork cells. Few glandular and numerous non-glandular trichomes are present.
Rosettes of calcium oxalate crystals are present.

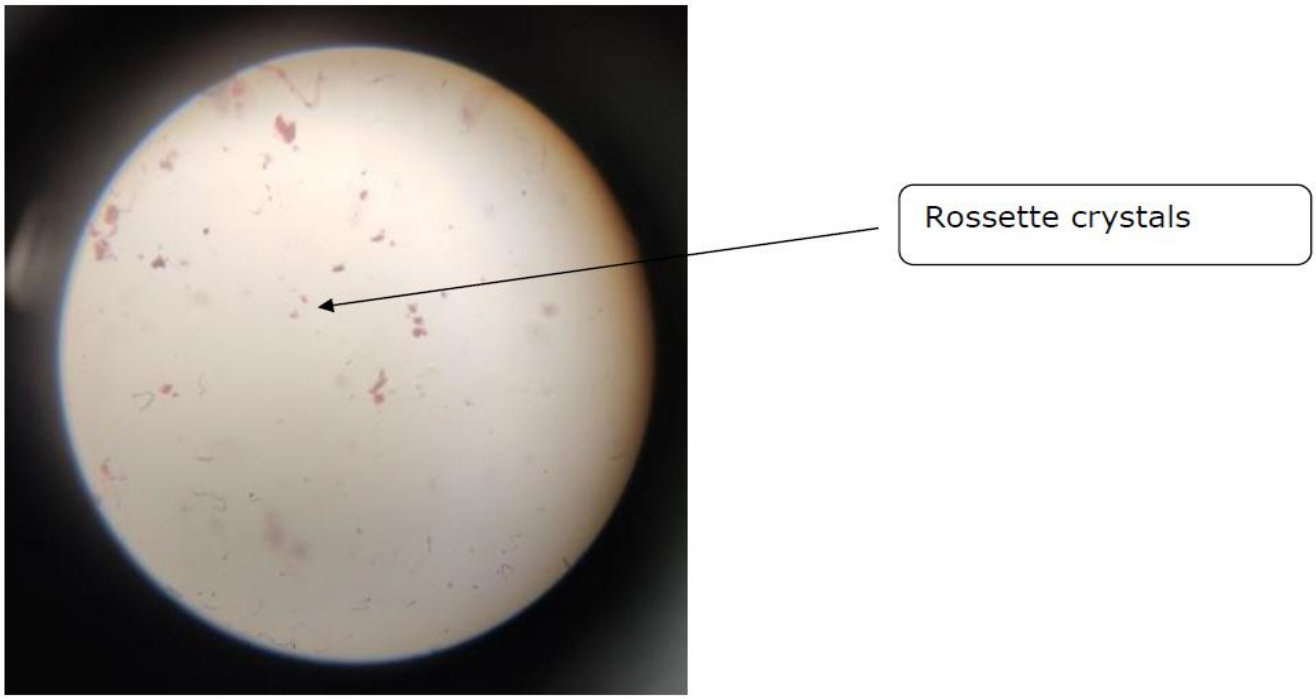

Fig.7 Powder Microscopy

Physicochemical Analysis

The various physicochemical parameters were studied in Agharkar Institute in Pune, Maharashtra.

A) Foreign matter
B) Moisture content
C) pH
D) Total ash
E) Acid insoluble ash
D) Water soluble extract
E) Alcohol soluble extract
F) Thin layer chromatography (TLC)

1. Foreign matter- Not more than 0%.
2. Moisture content- Not less than 14.54%.
3. PH- 6.24 at 29°C.
4. Water soluble ash- Not more than 6.67%.
5. Acid Insoluble ash- Not more than 1.83%.
6. Total ash- Not more than 10.01%.
7. Alcohol soluble extractive- Not more than 12.17%.
8. Water soluble extractive- Not more than 9.29%.
9. TLC
10. Test solution Methanol and Solvent Toluene: Ethyl acetate [93:07] was used.
11. Mobile phase: Solution Methanol and Solvent Toluene: Ethyl acetate [93:07] was used.
12. Stationary phase: silica coated TLC plate.
13. 9 spots were observed.

RF values are as follows: 0.135, 0.156, 0.2291, 0.291, 0.354, 0.416, 0.5, 0.541, 0.822

TLC plates

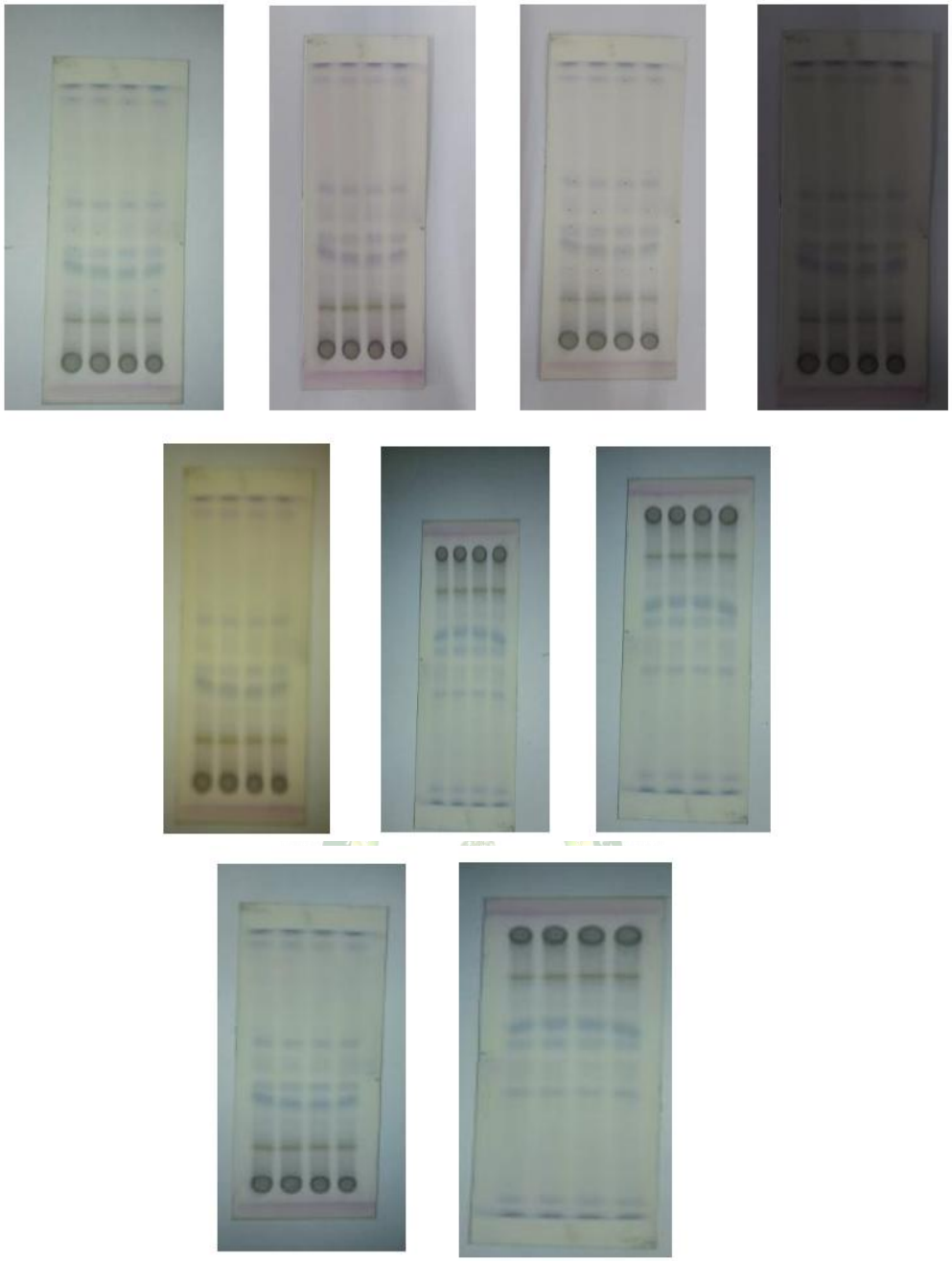

Fig.8 TLC plate images

Table 6: *Swaras* Specification

S.No	Test sample	*Damanak Swaras*
1	Colour	Green
2	Odour	Fruity fragrance
3	Taste	Astringent and bitter
4	pH	4.60
5	Specific gravity	1.088
6	Total solid content (110°C)	12.11
7	Acid value	65.17

DISCUSSION

The present study provides analysis of pharmacognostical characters of *Damanak*. The plant was collected from the wild source. Detailed organoleptic feature, microscopic evaluation along with TLC and physicochemical analysis was carried out.

CONCLUSION

Artemisia *nilagirica* commonly found in the hilly areas of India. The article talks about *Damanak* its Pharmacognosy, and pharmaco-therapeutic effects mentioned in *Nighantu*. Various *Nighantu* cite the plant's use as *Hrudya*, *Vrushya, Grahani, Vishaghna, Kustha, Kleda, Kandu,* and in *Tridosha*. Finally, this study presents a detailed examination of *Damanak's* pharmacognostical properties. The study's findings have important implications for the quality control and standardization of *Damanak*, as well as the creation of new herbal formulations and pharmaceutical product. More research is needed to investigate the medicinal potential of *Damanak* and its bioactive components. *Damanak* could be studied for use in the creation of novel medications, or they could be employed as lead compounds in the production of new pharmacological agents.

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***Address for correspondence**
Dr. Akash P. Chavan
Assistant Professor,
Dept. of Dravyaguna
Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Pune.
Email: akashchavan851@gmail.com

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